1   We claim:

2   1.   A method for tracking a transmission status of one or more data

3   elements to one or more devices, comprising:

4   providing a list including one or more devices and one or more data elements;

5   processing the list to determine a data element of said one or more data

6   elements to transmit to a device of one of the one or more devices; and

7   upon successfully transmitting the data element to the device, adjusting the

8   list so that the list indicates that the device has received the transmitted data

9   element.

10

11   2.   The method of claim 1, wherein the operation of providing a list

12   includes forming a linked list between the data elements and the devices.

13

14   3.   The method of claim 1, wherein the operation of providing a list

15   further comprises:

16   providing a global version number;

17   providing a local version number associated with each data element in the list;

18   and

19   providing a local version number associated with each device in the list.

20

21   4.   The method of claim 3, wherein when a data element is added to the

22   list, the local version number associated with the data element is set to a value of an

23   incremented global version number.

24

25   5.   The method of claim 3, wherein the local version number associated

26   with a device in the list is set to an initial value of zero.

27

28   6.   The method of claim 3, wherein the local version number associated

29   with a device in the list is set to an initial value of zero and is reset to the local

18

1 version number of a data element after the data element is successfully transmitted to

2 the device.

3 7. The method of claim 3, wherein the operation of providing a list

4 further comprises:

5 providing a pointer to a start of the list; and

6 providing a pointer to an end of the list.

7

8 8. The method of claim 7, further comprising:

9 adding a data element to the end of the list; and

10 incrementing the global version number.

11

12 9. The method of claim 7, further comprising:

13 adding a device to the beginning of the list.

14

15 10. The method of claim 3, wherein the operation of processing the list

16 further comprises:

17 locating a device in the list which is nearest to a start of the list;

18 obtaining the version number for the device; and

19 comparing the version number to the global version number to determine if

20 the device should have a data element transmitted to the device.

21

22 11. The method of claim 10, wherein the comparing operation determines

23 that the device should have a data element transmitted to the device if the version

24 number of the device is not equal to the global version number.

25

26 12. The method of claim 1, wherein the operation of adjusting the list

27 further comprises:

28 repositioning the device within the list adjacent to the data element and closer

29 to an end of the list than the data element.

13. The method of claim 3, wherein the operation of adjusting the list further comprises:

resetting the local version number of the device to be equal to the local version number of the transmitted data element.

14. A method for transmitting one or more data elements to one or more devices, comprising:

providing a list including one or more devices and one or more data elements;

processing the list to determine a data element of said one or more data elements to transmit to a device of one of the one or more devices;

transmitting the data element to the device; and

adjusting the list to indicate that the device has received the transmitted data element.

15. The method of claim 14, wherein the operation of providing a list includes forming a linked list between the data elements and the devices.

16. The method of claim 14, wherein the operation of providing a list further comprises:

providing a global version number;

providing a local version number associated with each data element in the list; and

providing a local version number associated with each device in the list.

17. The method of claim 16, wherein the local version number associated with a data element in the list is set to a value of the global version number at a time when the data element was added to the list.

1 18.   The method of claim 16, wherein the local version number associated

2 with a device in the list is set to an initial value of zero.

3

4 19.   The method of claim 16, wherein the operation of processing the list

5 further comprises:

6   locating a device in the list which is nearest to a start of the list;

7   obtaining the version number for the device; and

8   comparing the version number to the global version number to determine if

9 the device should have a data element transmitted to the device.

10

11 20.   The method of claim 19, wherein the comparing operation determines

12 that the device should have a data element transmitted to the device if the version

13 number of the device is not equal to the global version number.

14

15 21.   The method of claim 14, wherein the operation of adjusting the list

16 further comprises:

17   repositioning the device within the list adjacent to the data element and closer

18 to an end of the list than the data element.

19

20 22.   The method of claim 16, wherein the operation of adjusting the list

21 further comprises:

22   resetting the local version number of the device to be equal to the local

23 version number of the transmitted data element.

24

25 23.   A router, comprising:

26   a module for providing a list including one or more devices and one or more

27 data elements;

28   a module for processing the list to determine a data element of said one or

29 more data elements to transmit to a device of one of the one or more devices;

1   a module for transmitting the data element to the device; and

2   a module for adjusting the list so that the list indicates that the device has

3 received the transmitted data element.

4

1   We claim:

2   1.   A method for tracking a transmission status of one or more data

3   elements to one or more devices, comprising:

4   providing a list including one or more devices and one or more data elements;

5   processing the list to determine a data element of said one or more data

6   elements to transmit to a device of one of the one or more devices; and

7   upon successfully transmitting the data element to the device, adjusting the

8   list so that the list indicates that the device has received the transmitted data

9   element.

10

11   2.   The method of claim 1, wherein the operation of providing a list

12   includes forming a linked list between the data elements and the devices.

13

14   3.   The method of claim 1, wherein the operation of providing a list

15   further comprises:

16   providing a global version number;

17   providing a local version number associated with each data element in the list;

18   and

19   providing a local version number associated with each device in the list.

20

21   4.   The method of claim 3, wherein when a data element is added to the

22   list, the local version number associated with the data element is set to a value of an

23   incremented global version number.

24

25   5.   The method of claim 3, wherein the local version number associated

26   with a device in the list is set to an initial value of zero.

27

28   6.   The method of claim 3, wherein the local version number associated

29   with a device in the list is set to an initial value of zero and is reset to the local

1   version number of a data element after the data element is successfully transmitted to

2   the device.

3   7.   The method of claim 3, wherein the operation of providing a list

4   further comprises:

5   providing a pointer to a start of the list; and

6   providing a pointer to an end of the list.

7

8   8.   The method of claim 7, further comprising:

9   adding a data element to the end of the list; and

10 incrementing the global version number.

11

12   9.   The method of claim 7, further comprising:

13 adding a device to the beginning of the list.

14

15   10.   The method of claim 3, wherein the operation of processing the list

16 further comprises:

17   locating a device in the list which is nearest to a start of the list;

18   obtaining the version number for the device; and

19   comparing the version number to the global version number to determine if

20 the device should have a data element transmitted to the device.

21

22   11.   The method of claim 10, wherein the comparing operation determines

23 that the device should have a data element transmitted to the device if the version

24 number of the device is not equal to the global version number.

25

26   12.   The method of claim 1, wherein the operation of adjusting the list

27 further comprises:

28   repositioning the device within the list adjacent to the data element and closer

29 to an end of the list than the data element.

19

1

2   13.   The method of claim 3, wherein the operation of adjusting the list

3   further comprises:

4   resetting the local version number of the device to be equal to the local

5   version number of the transmitted data element.

6

7   14.   A method for transmitting one or more data elements to one or more

8   devices, comprising:

9   providing a list including one or more devices and one or more data elements;

10   processing the list to determine a data element of said one or more data

11   elements to transmit to a device of one of the one or more devices;

12   transmitting the data element to the device; and

13   adjusting the list to indicate that the device has received the transmitted data

14   element.

15

16   15.   The method of claim 14, wherein the operation of providing a list

17   includes forming a linked list between the data elements and the devices.

18

19   16.   The method of claim 14, wherein the operation of providing a list

20   further comprises:

21   providing a global version number;

22   providing a local version number associated with each data element in the list;

23   and

24   providing a local version number associated with each device in the list.

25

26   17.   The method of claim 16, wherein the local version number associated

27   with a data element in the list is set to a value of the global version number at a time

28   when the data element was added to the list.

29

1   18.   The method of claim 16, wherein the local version number associated

2   with a device in the list is set to an initial value of zero.

3

4   19.   The method of claim 16, wherein the operation of processing the list

5   further comprises:

6   locating a device in the list which is nearest to a start of the list;

7   obtaining the version number for the device; and

8   comparing the version number to the global version number to determine if

9   the device should have a data element transmitted to the device.

10

11   20.   The method of claim 19, wherein the comparing operation determines

12   that the device should have a data element transmitted to the device if the version

13   number of the device is not equal to the global version number.

14

15   21.   The method of claim 14, wherein the operation of adjusting the list

16   further comprises:

17   repositioning the device within the list adjacent to the data element and closer

18   to an end of the list than the data element.

19

20   22.   The method of claim 16, wherein the operation of adjusting the list

21   further comprises:

22   resetting the local version number of the device to be equal to the local

23   version number of the transmitted data element.

24

25   23.   A router, comprising:

26   a module for providing a list including one or more devices and one or more

27   data elements;

28   a module for processing the list to determine a data element of said one or

29   more data elements to transmit to a device of one of the one or more devices;

21

1   a module for transmitting the data element to the device; and

2   a module for adjusting the list so that the list indicates that the device has

3 received the transmitted data element.

4